

Application Serial No. 10/785,259
Reply to Office Action of March 1, 2006

PATENT
Docket No. CU-3606

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REMARKS/ARGUMENTS

Reconsideration is respectfully requested.

Claims 1, 3 and 6 are pending in the present application before this amendment.

By the present amendment, claim 1 has been amended. Claims 8-10 have been added.

No new matter has been added.

The examiner rejects claims 1, 3 and 6 under 35 U.S.C. 103(a) as being unpatentable over Koskenmaki. The examiner states:

"Koskenmaki discloses a method of forming a metal oxide on a substrate by vapor depositing a metal layer and subsequently annealing the coated substrate in the presence of oxygen at a temperature of between about 90° and about 150° C for one or more hours. The resultant film can be used as diffusion barriers. The substrate can be polymeric and can be polyesters, polyamides, or polypropylene. However, the reference fails to specifically teach providing a vapor deposited inorganic oxide film.

It is noted that the reference teaches of oxidizing a metal layer by annealing in oxygen. One skilled in the art would realize that the oxidizing a metal oxide metal layer by annealing in oxygen would result in annealed oxide film. It would have been obvious to substitute the metal oxide layer for the metal layer of Koskenmaki with the expectation of obtaining similar results.

In claim 3, the applicant requires the oxide to be silicon oxide or aluminum oxide. It is well known that the metal oxide behave similarly and that a process of depositing one metal oxide can be utilized to deposit a different metal oxide. It would have been obvious to utilize aluminum as the metal in Koskenmaki's process with the expectation of success.

The limitation of claim 6 has been addressed above."

The technique disclosed in Koskenmaki is to form discrete metal microspheres embedded in a metal oxide layer, by depositing a metal layer onto a substrate, heating the coated substrate in the presence of oxygen at a prescribed temperature for a prescribed time so as to oxidize the exposed surface side part of the metal layer and

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thus to form a metal oxide layer on the exposed surface, contacting the oxide layer with a fluxing agent (the fluxing agent can permeate through the metal oxide layer and reach the metal layer) in order to loosen the bond between the metal oxide layer and the metal layer, providing a protective polymeric layer (resin layer) on the metal oxide layer, and finally heating in order to melt the metal layer so as to form the metal microspheres.

Thus, the product obtained by the process of Koskenmaki is considerably different from that obtained by the presently claimed invention.

As mentioned above, the examiner stated that:

"the reference teaches of oxidizing a metal layer by annealing in oxygen. One skilled in the art would realize that the oxidizing a metal oxide metal layer by annealing in oxygen would result in annealed oxide film. It would have been obvious to substitute the metal oxide layer for the metal layer of Koskenmaki with the expectation of obtaining similar results."

However, the annealing (heating) in oxygen shown in the reference is strictly for the purposes of forming the metal oxide layer by the oxidation of the metal layer. Thus, assuming that the metal oxide layer is substituted for the metal layer of Koskenmaki, the person skilled in the art would naturally consider that there is no need to apply such a annealing treatment. Therefore, from the teaching of the reference and the common sense of the persons skilled in the art, it is hardly considered to provide an annealing step after depositing a metal oxide layer.

Further, in Koskenmaki's method, since it is very important to form a metal layer which is necessary for finally forming metal microspheres embedded in the metal oxide layer, a person skilled in the pertinent art would hardly consider that the metal layer can be omitted by directly forming a metal oxide layer. In addition, since in Koskenmaki's method the final heating step is provided in order to melt the metal layer, a person

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skilled in the pertinent art would naturally consider that the final heating step should be also omitted in the case of substituting a metal oxide layer for the metal layer.

Therefore, the examiner's opinion can be traversed.

As to the new claims 8-10, there are restrictions that the substrate film to be treated has a residual stress of being in the range of from 0.1 to 1%, and the thermal shrinkage of the substrate caused by the treatment is in the range of from -0.001 to -1.0%. Such conditions are not at all disclosed or taught by Koskenmaki where an annealing or heating step in accordance with a different purpose from the presently claimed invention is disclosed.

In the presently claimed invention, as distinct from Koskenmaki, the annealing treatment is provided for the purpose of obtaining a film which has an outstanding barrier property, by causing a shrinkage in the substrate film, the shrinkage making the metal oxide film formed on the substrate denser. Therefore, when expecting a more preferable barrier property, etc., to define the residual stress in the substrate film to be treated and the degree of thermal shrinkage as above is meaningful, and which can never be obvious from Koskenmaki.

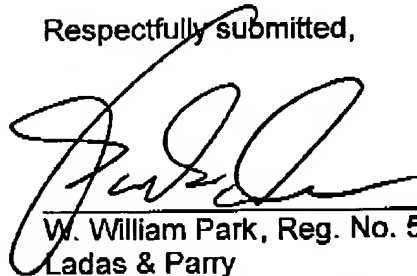
For the reasons set forth above, the applicants respectfully submits that claims 1, 3, 6 and 8-10, now pending in this application, are in condition for allowance over the cited references. Accordingly, the applicants respectfully request reconsideration and withdrawal of the outstanding rejections and earnestly solicit an indication of allowable subject matter. This amendment is considered to be responsive to all points raised in the Office Action. Should the examiner have any remaining questions or concerns, the

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examiner is encouraged to contact the undersigned attorney by telephone to
expeditiously resolve such concerns.

Respectfully submitted,



Dated: August 31, 2006

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